

Does artificial light affect aquatic and terrestrial insect communities?

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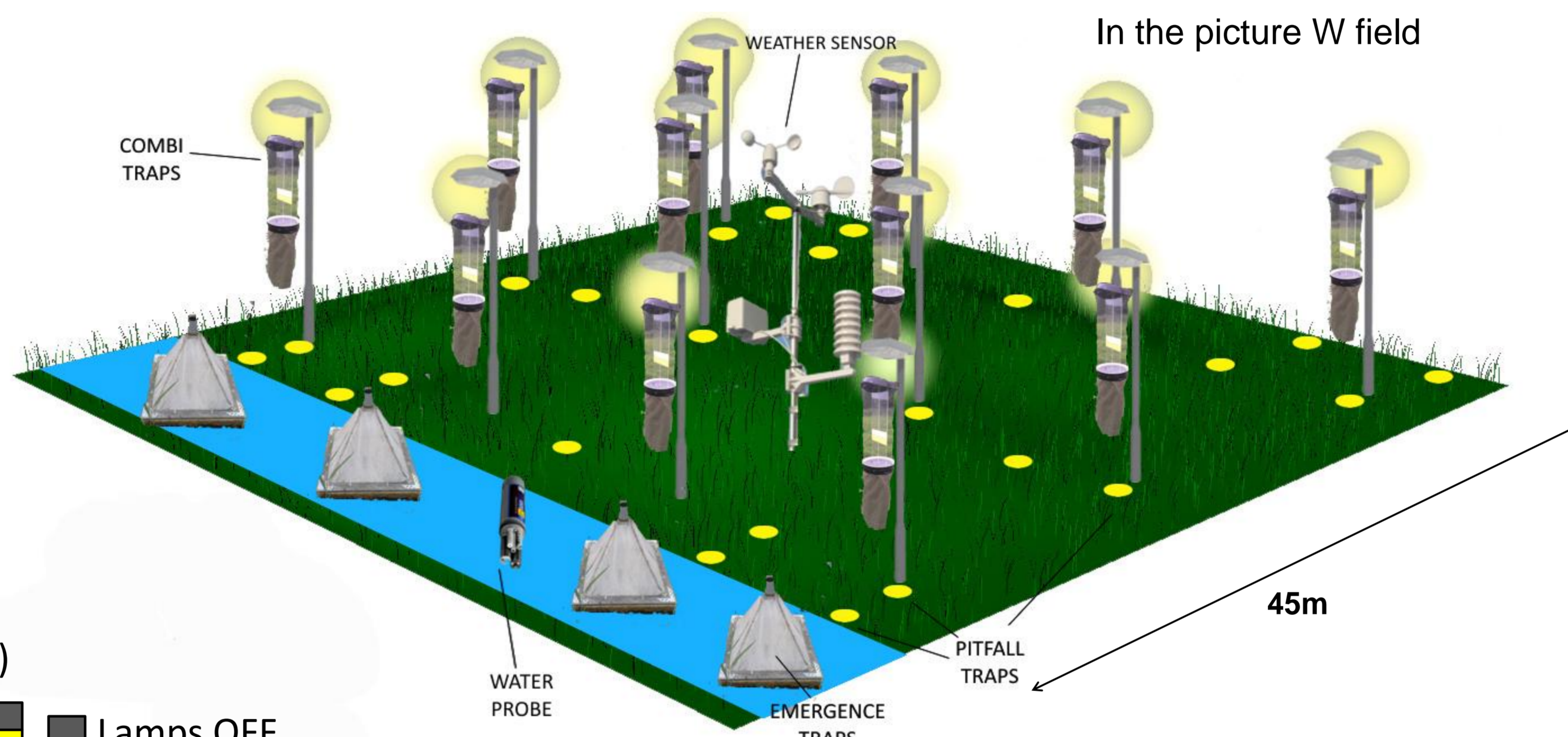
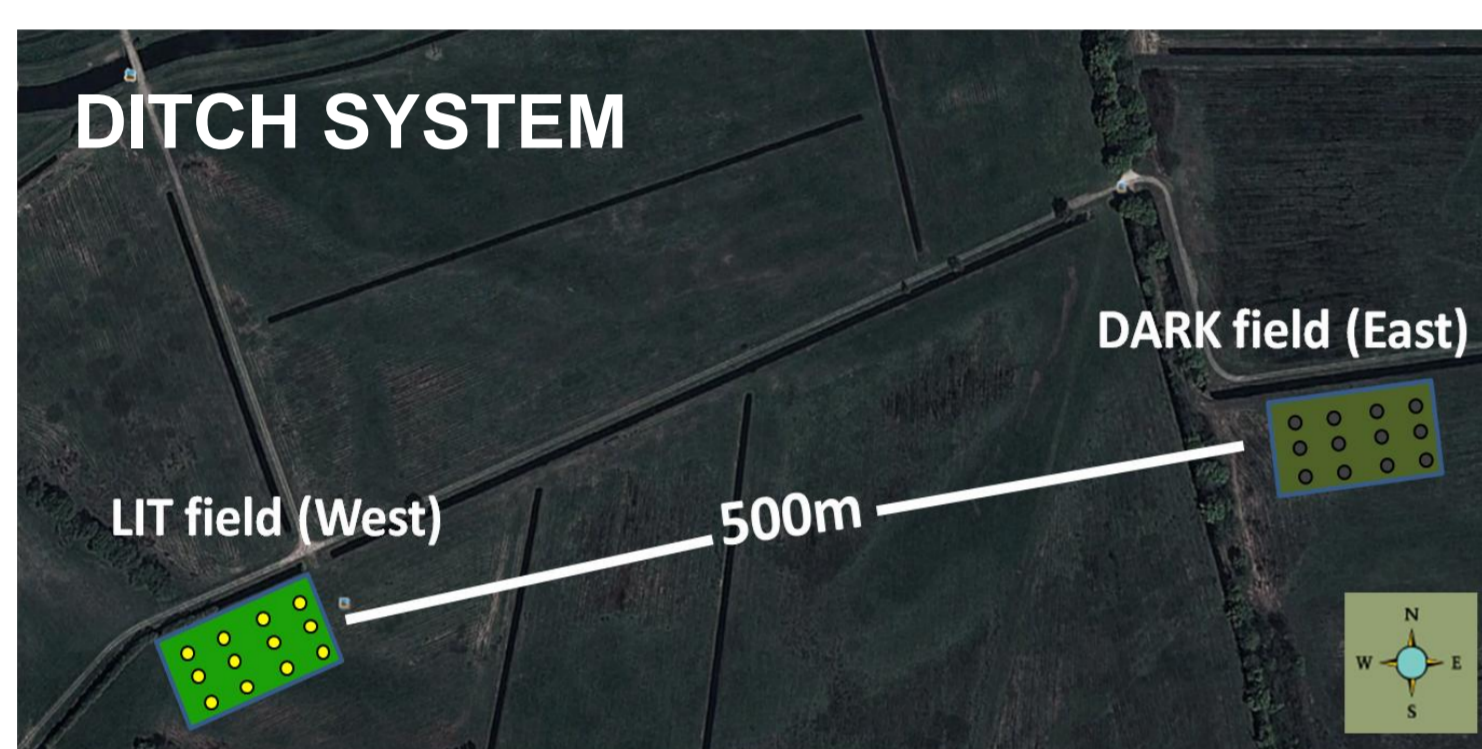


- Artificial light (AL) represents one of the most widespread human-induced alterations of the landscape (Longcore & Rich, 2004)
- 64.4% of invertebrates are strictly nocturnal and therefore potentially affected by changes in the natural light regime (Hölker et al., 2010)
- Studies assessing how artificial light affects aquatic - terrestrial insect communities are surprisingly scarce (Meyer et al., 2013; Perkin et al., 2014)

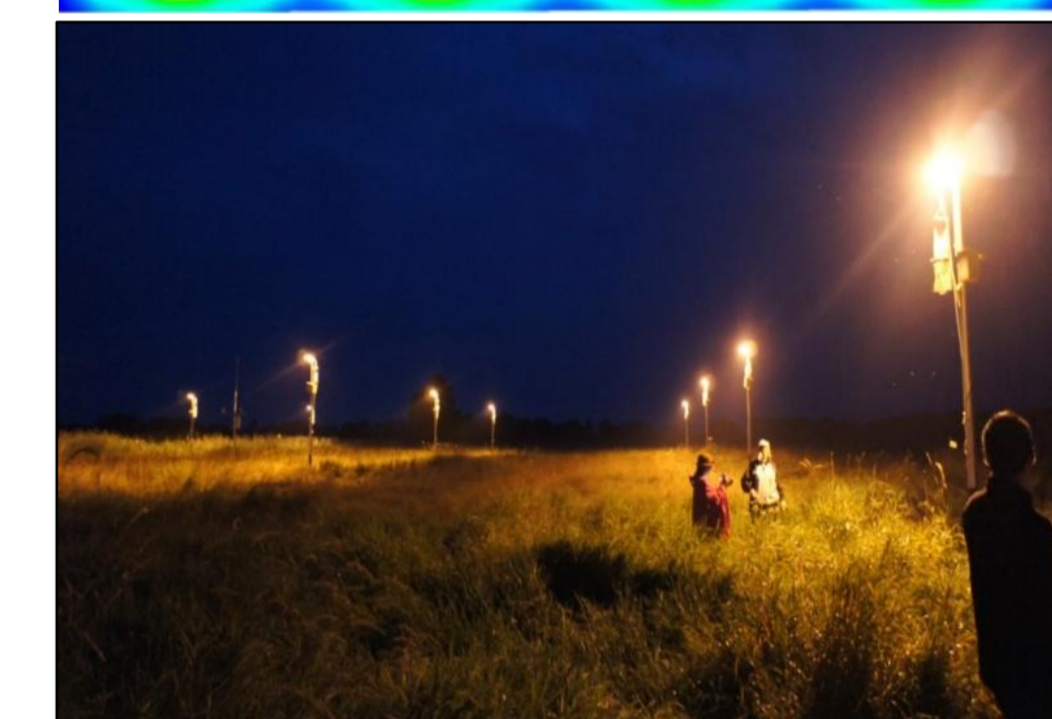
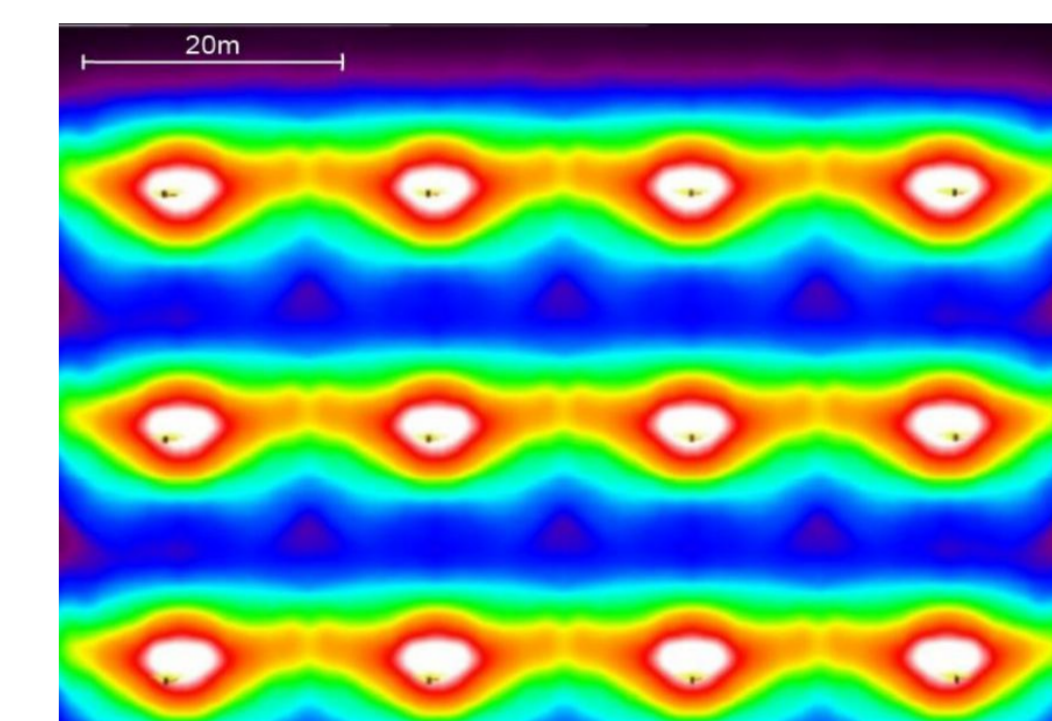
A field experiment approach

Naturpark Westhavelland
Brandenburg (DE)

- West field (W) = LIT field
- East field (E) = DARK field (control)

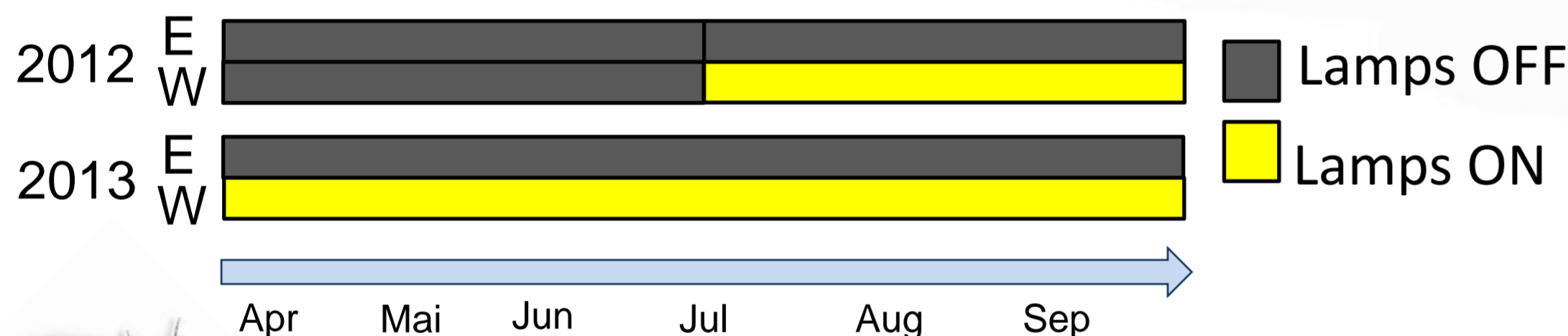


Street - lamps equipped with 70W high pressure sodium lamps (HPS)

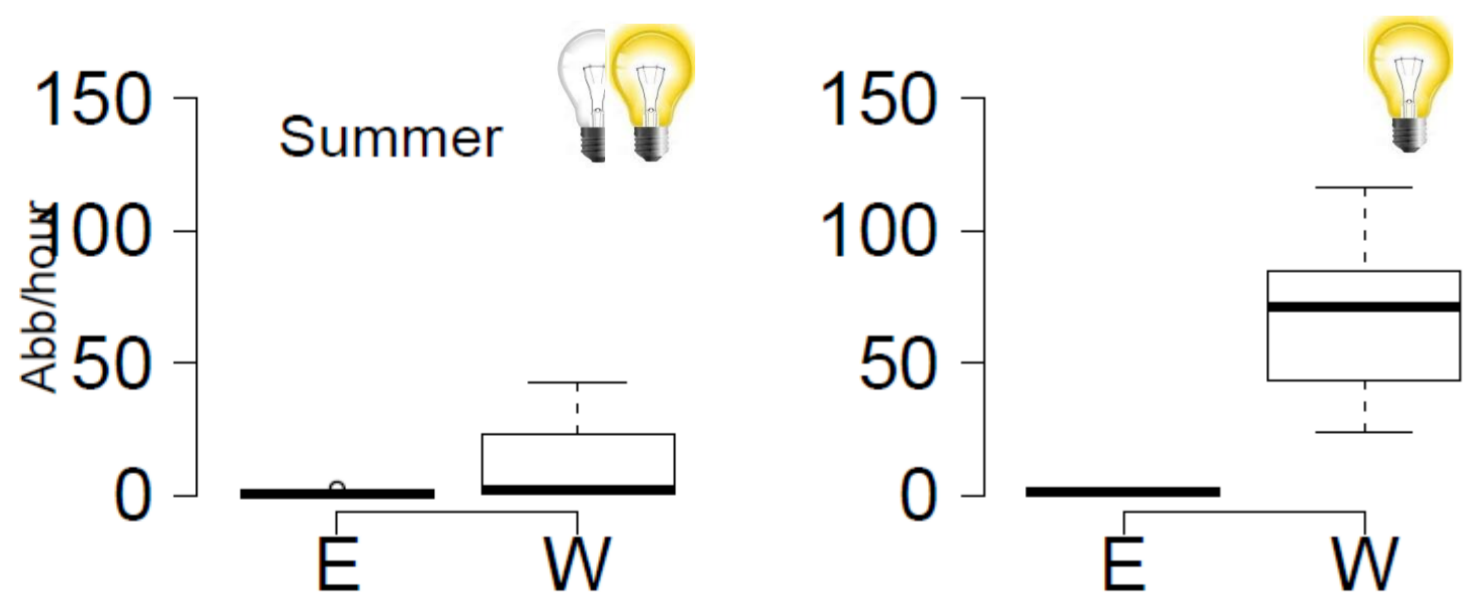
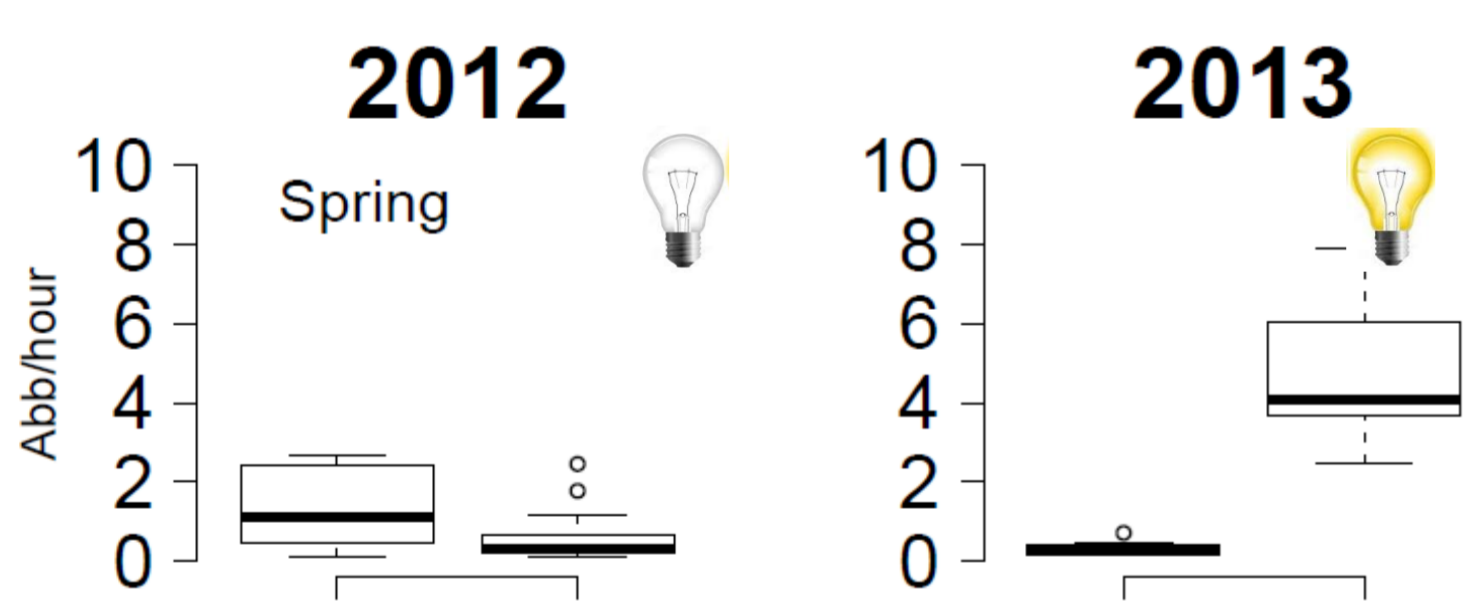


„Street lighting“

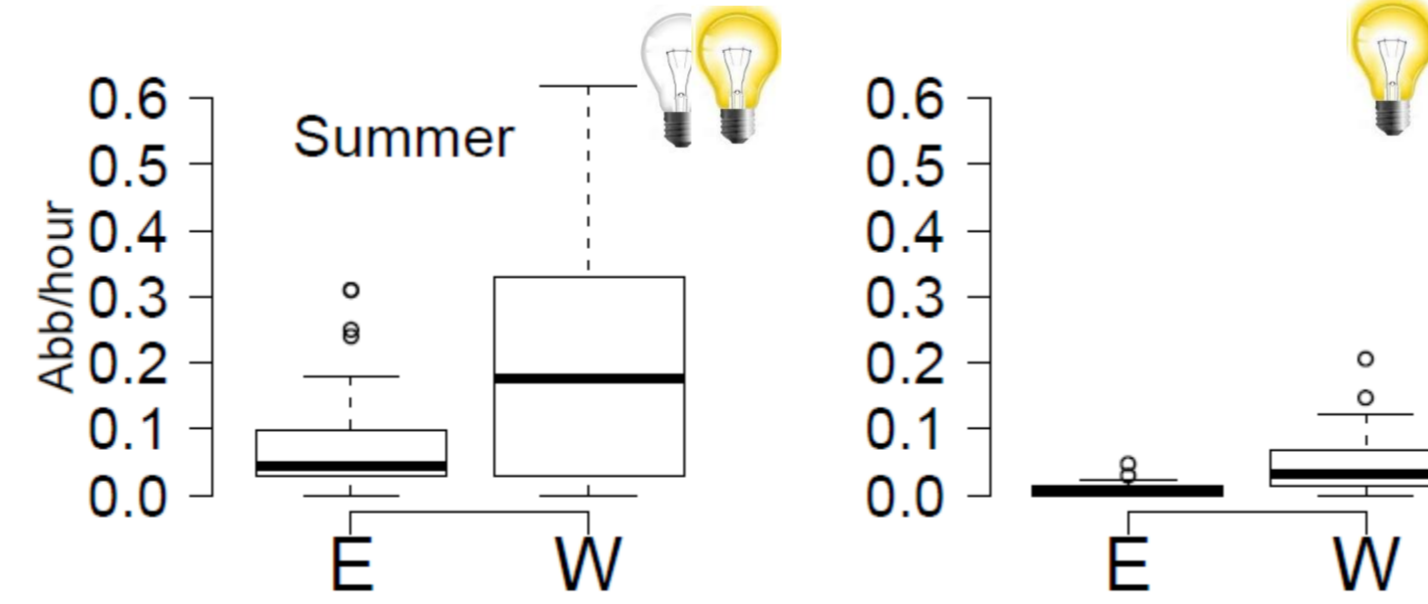
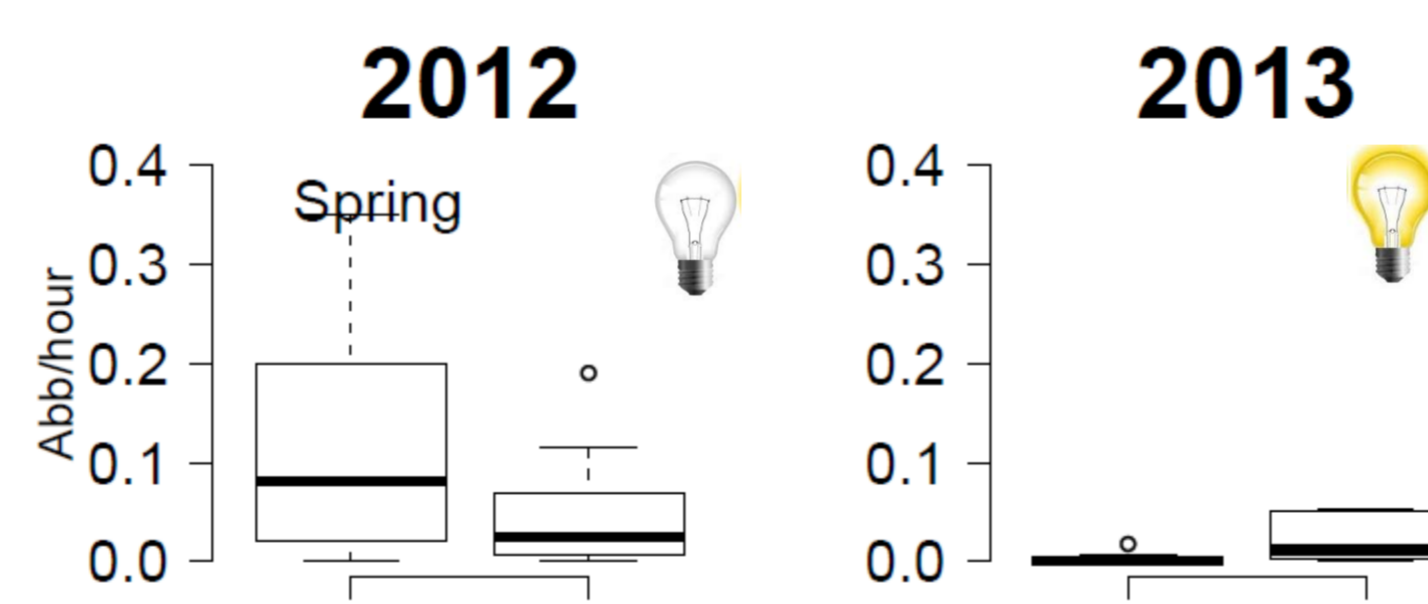
Half-moon sampling (every 2 weeks)



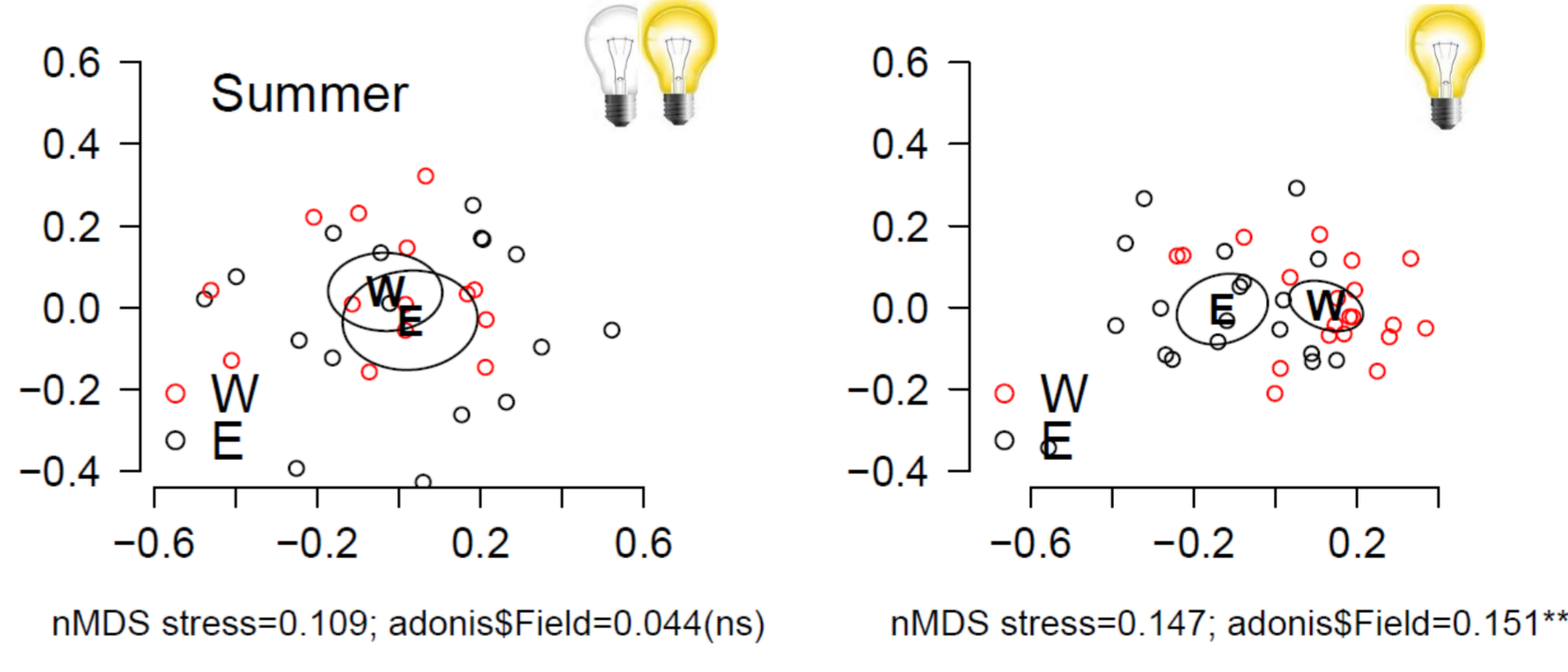
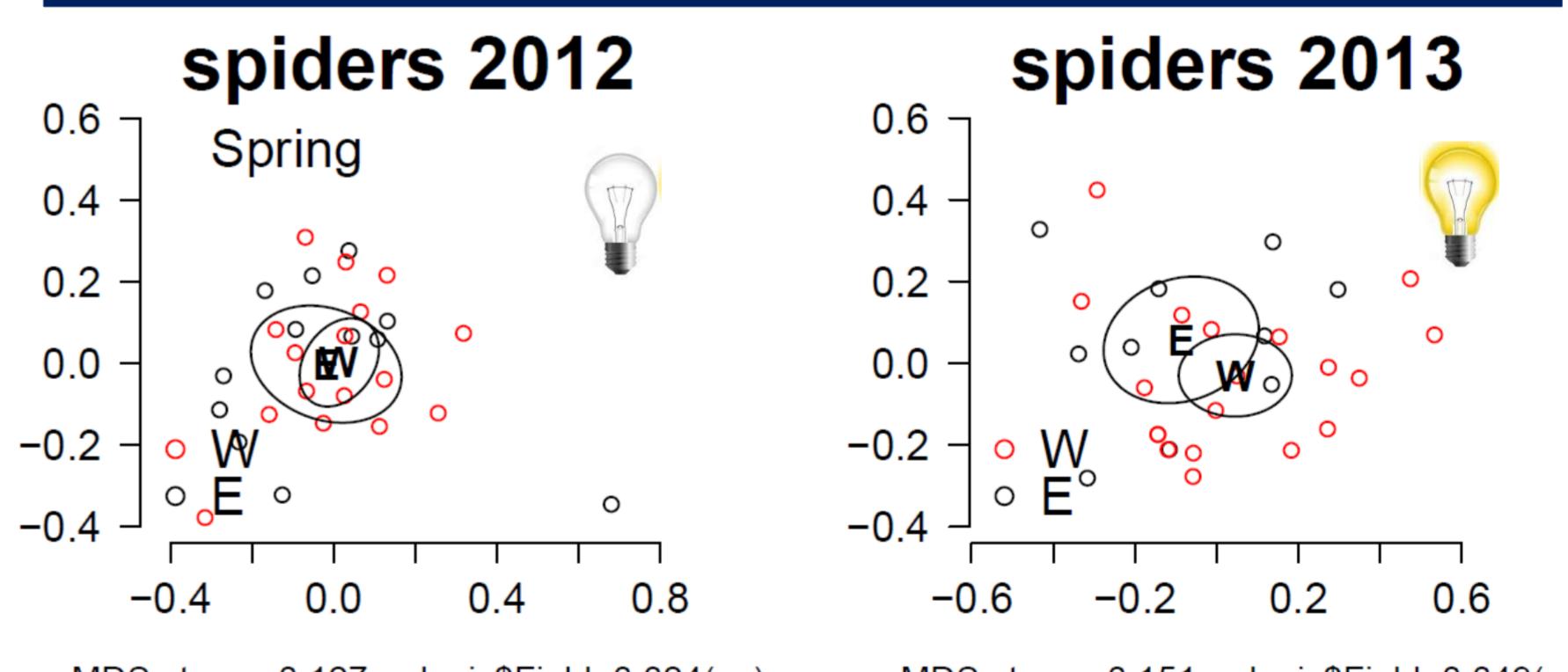
Combi traps



Emergence traps



Pitfall traps



IN THE PLOTS

- Samplings pooled in 2 seasons: spring and summer
- Box plots – Abb/hour: total insect abundance (catch per unit (time) effort)
- nMDS - multivariate ordination of Abb/hour
- Lamps OFF in W and E field
- Lamps ON in W field, Lamps OFF in E field
- Lamps ON in W field only from half July 2012 (half summer)

AL has complex influence on aquatic and terrestrial insects

- Combi traps: AL attracts aquatic (e.g. Ephemeroptera, Trichoptera, Diptera) and terrestrial (e.g. Lepidoptera) insects, affecting their dispersal patterns.
- Emergence traps: similar pattern to that in the combi traps suggests the attraction of post emerged aquatic insects to AL but the effect of AL on insect emergence rate is less clear.
- Pitfall traps: AL seasonally affects spiders abundance, probably spiders are attracted by the increased abundance of prey around the lamps